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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/027,873	12/21/2001	Richard L. Knipe	TI-26153	1022

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TEXAS INSTRUMENTS INCORPORATED
P O BOX 655474, M/S 3999
DALLAS, TX 75265

EXAMINER

CHOI, WILLIAM C

ART UNIT	PAPER NUMBER
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2873

DATE MAILED: 02/27/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/027,873

Applicant(s)

KNIPE, RICHARD L.

Examiner

William C. Choi

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-31 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 25-29 is/are allowed.
- 6) ☒ Claim(s) 1-15, 17, 19-24, 30 and 31 is/are rejected.
- 7) ☒ Claim(s) 16 and 18 is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 21 December 2001 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on ____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☒ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 4.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). ____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other:

DETAILED ACTION

Priority

Applicant's claim for domestic priority under 35 U.S.C. 119(e) is acknowledged.

Information Disclosure Statement

Receipt of the Information Disclosure Statement (IDS) with the copies of the references cited therein was received on 5/15/2002. An initialized copy of the IDS is enclosed with this office action.

Drawings

The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they include the following reference sign(s) not mentioned in the description: Specifically in regards to Figure 1, elements 118, 120, 122, 124 and 126 are not referenced in the detailed description for Figure 1 in the specification and references to elements 104 and 106 as disclosed in the specification under the detailed description for Figure 1 are not clearly depicted in the drawing. With regard to Figure 2, elements 118, 120, 122, 124 and 130 are not clearly depicted in the drawing as disclosed in the detailed description for Figure 2 in the specification as well as there being no reference to elements 104, 106 and 116 in the detailed description for Figure 2 in the specification. A proposed drawing correction, corrected drawings, or amendment to the specification to add the reference sign(s) in the description, are required in reply to the

Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

Specification

Applicant is reminded of the proper language and format for an abstract of the disclosure.

The abstract should be in narrative form and generally limited to a single paragraph on a separate sheet within the range of 50 to 150 words. It is important that the **abstract not exceed 150 words in length** since the space provided for the abstract on the computer tape used by the printer is limited. The form and legal phraseology often used in patent claims, such as "means" and "said," should be avoided. The abstract should describe the disclosure sufficiently to assist readers in deciding whether there is a need for consulting the full patent text for details.

The language should be clear and concise and should not repeat information given in the title. It should avoid using phrases which can be implied, such as, "The disclosure concerns," "The disclosure defined by this invention," "The disclosure describes," etc.

Claim Objections

Claim 14 is objected to because of the following informalities: In claim 14, line 2, applicant discloses said micromechanical device comprising "a deflectable member", and then further discloses "each deflectable member" indirectly indicating more than one member. For purposes of examination, it was assumed applicant meant for only one deflectable member. Appropriate correction is required.

Claim 18 is objected to because of the following informalities: In claim 18, line 2, applicant discloses said means for selectively electrically connecting comprising "a pass transistor." and then continues with "a pass transistor" in line 3. For purposes of

examination, it was assumed that applicant only meant to have one "pass transistor" in the claim. Therefore, applicant is encouraged to delete one instance of the "pass transistor" if that was the intended meaning. Appropriate correction is required.

Applicant is advised that should claims 23 and 24 be found allowable, claims 30 and 31 will be objected to under 37 CFR 1.75 as being a substantial respective duplicates thereof. When two claims in an application are duplicates or else are so close in content that they both cover the same thing, despite a slight difference in wording, it is proper after allowing one claim to object to the other as being a substantial duplicate of the allowed claim. See MPEP §706.03(k).

Claim Rejections - 35 USC § 112

The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claim 1 (and dependent claims 2-13) are rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention. Specifically, in line 4 of claim 1, applicant discloses "a switch" driven for selectively connecting said member to a voltage signal. However, there is no mention of "a switch" either in the specification or disclosed in the drawings, therefore not enabling one of ordinary skill in the art to make the invention. Claims 2-13 inherit the rejection due to their dependency on claim 1.

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claim 1 (and dependent claims 2-13) are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Specifically, in line 4 of claim 1, applicant discloses "a switch" driven for selectively connecting said member to a voltage signal. However, there is no mention of "a switch" either in the specification or disclosed in the drawings, thereby rendering these claims vague and indefinite. For purposes of examination, examiner assumed "a means" driven for selectively connecting said member to a voltage signal in line with the terminology presented in claim 14. Claims 2-13 inherit the rejection due to their dependency on claim 1.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in-

- (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effect under this subsection of a national application published under section 122(b) only if the international application designating the United States was published under Article 21(2)(a) of such treaty in the English language; or
- (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that a patent shall not be deemed filed in the United States for the purposes of this subsection based on the filing of an international application filed under the treaty defined in section 351(a).

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Claims 1, 2, 5, 7- 9, 14, 15, 19-24, 30 and 31 are rejected under 35 U.S.C. 102(b) as being anticipated by Gale et al (U.S. 5,444,566).

In regards to claim 1, Gale et al discloses a micromechanical device (Figure 1a) comprising: a semiconductor substrate (column 2, line 66, Figure 1a, "34"); a member operable to deflect about a torsion axis to either of at least two states (Figures 1a-1c, "26") and a means driven for selectively connecting said member to a voltage signal (column 8, lines 25-58, Figure 16).

Regarding claim 2, Gale et al discloses said device further comprising: a memory cell for storing positioning information, said memory cell having an output driving said means (column 6, lines 14-34).

Regarding claim 5, Gale et al discloses said device comprising a bias electrode on either side of said torsion axis (column 2, line 68 – column 3, line 1, Figure 1b, "28" and "30").

Regarding claim 7, the means of Gale et al would inherently selectively connect said member to a ground signal, this being reasonably assumed from Gale et al disclosing a torque produced when the mirror is grounded (column 4, lines 10-13).

Regarding claim 8, Gale et al discloses said switch comprising a pass transistor (column 8, line 38, Figure 16, "190").

Regarding claim 9, Gale et al discloses wherein said member is a micromirror (column 2, lines 53-65, Figure 1a, "26").

In regards to claim 14, Gale et al discloses a micromechanical device comprising: a deflectable member supported by a torsion hinge and spaced apart from

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a substrate (Figure 1a, "26"); at least two bias electrodes supported by said substrate, one on each side of an axis of said torsion hinge (Figure 1b, "28" and "30"); a means for selectively connecting said deflectable member to a voltage potential (column 8, lines 25-58, Figure 16).

Regarding claim 15, Gale et al discloses wherein said means for selectively electrically connecting comprising a pass transistor (column 8, line 38, Figure 16, "190")..

In regards to claim 19, Gale et al discloses a method of operating a micromechanical device (Abstract and column 1, lines 6-8), the method comprising: selectively grounding a deflectable member; and applying a reset signal to bias electrodes to reposition said selectively grounded deflectable member (column 1, lines 53-57 and column 4, lines 40-46).

Regarding claim 20, Gale et al discloses said method further comprising applying a bias potential to said bias electrodes to hold said repositioned deflectable member in place (column 6, lines 1-4).

Regarding claim 21, Gale et al discloses said deflectable member operable to deflect in one of two directions from a neutral position (column 3, lines 17-18, Figure 1c).

Regarding claim 22, Gale et al discloses said selectively grounding a deflectable member comprising: grounding said deflectable member to cause said deflectable member to be repositioned during by said reset signal, and floating said deflectable member to prevent said deflectable member from being repositioned by said reset

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signal (column 1, lines 53-57, column 4, lines 40-46 and column 5, line 67 – column 6, line 4).

Regarding claims 23 and 30, Gale et al discloses: applying an initialization signal to said bias electrodes to force said deflectable member to a known state (column 4, line 58 – column 5, line 20).

Regarding claims 24 and 31, Gale et al discloses applying an initialization signal to said bias electrodes to force said deflectable member to a known state comprising: applying a voltage signal to one of said bias electrodes and a ground signal to another one of said bias electrodes (column 5, lines 3-7, Figure 11, “60” and “62”).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 3, 4, 10, 12 and 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Gale et al (U.S. 5,444,566) as applied to claim 1 above, and further in view of Gale et al (U.S. 5,285,407).

Regarding claim 3, Gale et al (U.S. 5,444,566) discloses said device comprising a memory cell for storing positioning information (column 6, lines 14-34) but does not specifically disclose said memory cell comprising a capacitor storing a charge representing said positioning information. Gale et al (U.S. 5,444,566) does teach,

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however, the use of the memory cell of (U.S. 5,285,407) of the same inventorship, in his device (column 6, lines 58-63). Gale et al (U.S. 5,285,407) teaches a memory cell comprising a capacitor (Figure 4, "32", "C1" and "C2"), which inherently will store a charge representing said positioning information. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made for the memory cell of Gale et al (U.S. 5,444,566) to comprise a capacitor storing a charge representing said positioning information since Gale et al teaches its specific use in his device.

Regarding claim 4, Gale et al (U.S. 5,285,407) further teaches said memory cell comprising a pass transistor (column 6, lines 8-13).

Regarding claim 10, Gale et al (U.S. 5,285,407) further teaches wherein said means comprises: a pass transistor having a gate and two terminals, said gate connected to said memory capacitor, one said terminal connected to said member and a second said terminal connected to a voltage connection (Figure 4).

Regarding claims 12 and 13, Gale et al teaches wherein said memory cell is operable to turn on and off said pass transistor when said memory cell capacitor holds a first charge and second charge respectively (column 3, lines 61-68).

Claim 17 is rejected under 35 U.S.C. 103(a) as being unpatentable over Gale et al (U.S. 5,444,566) as applied to claim 14 above, and further in view of Gale et al (U.S. 5,285,407).

Regarding claim 17, Gale et al (U.S. 5,444,566) discloses as set forth above, but does not specifically disclose wherein said means for selectively electrically connecting

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comprising: a pass transistor; and a capacitor connected to a gate terminal of said pass transistor. Gale et al (U.S. 5,444,566) does teach, however, the use of the memory cell of (U.S. 5,285,407) of the same inventorship, in his device (column 6, lines 58-63).

Gale et al (U.S. 5,285,407) teaches wherein said means for selectively electrically connecting comprising: a pass transistor; and a capacitor connected to a gate terminal of said pass transistor (Figure 4). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made for said means of Gale et al (U.S. 5,444,566) to comprise a pass transistor; and a capacitor connected to a gate terminal of said pass transistor since Gale et al teaches its specific use in his device.

Allowable Subject Matter

Claims 25-29 are allowed.

The following is a statement of reasons for the indication of allowable subject matter: The prior art fails to teach a combination of all the claimed features as presented in claims 25-29: a method of operating an array of micromechanical elements as claimed specifically comprising grounding a deflectable member of a first group of said micromechanical elements; allowing a deflectable member of a second group of said micromechanical elements to electrically float; and applying a reset signal to bias electrodes associated with said micromechanical elements in said first and said second groups.

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Claims 16 and 18 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The following is a statement of reasons for the indication of allowable subject matter: The prior art fails to teach a combination of all the claimed features as presented in claim 16: a micromechanical device as claimed specifically wherein said means for selectively connecting comprises a pass transistor for electrically connecting said deflectable member to a ground potential.

The prior art fails to teach a combination of all the claimed features as presented in claim 18: a micromechanical device as claimed specifically wherein said means for selectively electrically connecting comprises: a second terminal of a capacitor connected to a ground potential.

Claims 6 and 11 would be allowable if rewritten to overcome the rejection(s) under 35 U.S.C. 112, second paragraph, set forth in this Office action and to include all of the limitations of the base claim and any intervening claims.

Prior Art Citations

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Huffman (U.S. 6,480,433 B2), Chen et al (U.S. 6,473,361 B1), Huibers (U.S. 6,356,378 B1) and Nakamura (U.S. 5,953,103) are being cited herein to show micromechanical devices comprising some of the limitations of that of the claimed invention. However, additional rejections would have been repetitive.

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Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to William C. Choi whose telephone number is (703) 305-3100. The examiner can normally be reached on Monday-Friday from about 9:00 am to 6 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Georgia Y. Epps can be reached on (703) 308-4883. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 305-3431 for regular communications and (703) 305-3432 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.

W. C.
William Choi
Patent Examiner
Art Unit 2873
February 24, 2003


Georgia Epps
Supervisory Patent Examiner
Technology Center 2800